Electronic TUBES

6SN7-GTB—6SN7-GTA—12SN7-GTA

TWIN TRIODE

DESCRIPTION AND RATING

The 6SN7-GTB is a medium-mu twin triode suitable for use in a wide variety of general-purpose amplifier and phase-inverter applications. It is also especially useful as a blocking oscillator, multivibrator, or vertical-deflection amplifier in television receivers.

Electrically and physically the 6SN7-GTB is a replacement for the 6SN7-GTA. In addition, however, the 6SN7-GTB exhibits a controlled heater warm-up characteristic which makes the tube especially suited for use in television receivers which employ series-connected heaters. When the 6SN7-GTB is used in conjunction with other 600-milliampere types which have essentially the same heater warm-up characteristic, heater voltage surges across the individual tubes are minimized during the warm-up.

Except for heater and heater warm-up time ratings, the 12SN7-GTA is identical to the 6SN7-GTB.

GENERAL

Electrical

Cathode—Coated Unipotential

	6SN7-GTA	6SN7-GTB	12SN7-GTA	
Heater Voltage, AC or DC	6.3	6.3	12.6	Volts
Heater Current	0.6	0.6	0.3	Amperes
Heater Warm-up Time*		10.5	...	Seconds

Direct Interelectrode Capacitances†

	Section 1	Section 2	
Grid to Plate	4.0	3.8	μμf
Input	2.2	2.6	μμf
Output	0.7	0.7	μμf

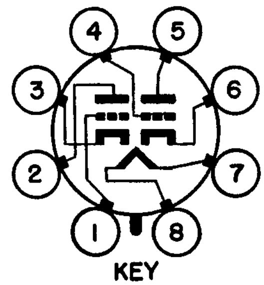
Mechanical

Mounting Position—Any

Envelope—T-9, Glass

Base—B8-6, Intermediate Shell Octal 8-Pin
or B8-58, Short Intermediate Shell Octal 8-Pin

BASING DIAGRAM

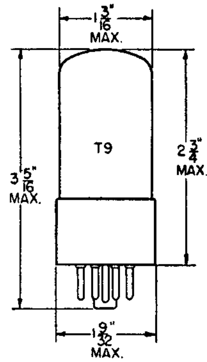


RETMA 8BD

TERMINAL CONNECTIONS

Pin 1—Grid (Section 2)
Pin 2—Plate (Section 2)
Pin 3—Cathode (Section 2)
Pin 4—Grid (Section 1)
Pin 5—Plate (Section 1)
Pin 6—Cathode (Section 1)
Pin 7—Heater
Pin 8—Heater

PHYSICAL DIMENSIONS



RETMA 9-11
or 9-41

GENERAL ELECTRIC

Supersedes ET-T714A dated 6-53

MAXIMUM RATINGS

DESIGN-CENTER VALUES UNLESS OTHERWISE INDICATED, EACH SECTION

	Class A Amplifier	Vertical-Deflection Amplifier‡	
DC Plate Voltage	450	450	Volts
Peak Positive Pulse Plate Voltage		1500§	Volts
Peak Negative Grid Voltage		250	Volts
Plate Dissipation, Each Plate	5.0	5.0π	Watts
Total Plate Dissipation, Both Plates	7.5	7.5π	Watts
DC Cathode Current	20	20	Milliamperes
Peak Cathode Current		70	Milliamperes
Heater-Cathode Voltage			
Heater Positive with Respect to Cathode			
DC Component	100	100	Volts
Total DC and Peak	200	200	Volts
Heater Negative with Respect to Cathode			
Total DC and Peak	200	200	Volts
Grid Circuit Resistance			
With Fixed Bias	1.0	..	Megohms
With Cathode Bias	1.0	2.2	Megohms

	Vertical-Oscillator Service‡	Horizontal-Oscillator Service‡	
DC Plate Voltage	450	450	Volts
Peak Negative Grid Voltage	400	600	Volts
Plate Dissipation, Each Plate	5.0	5.0	Watts
Total Plate Dissipation, Both Plates	7.5	7.5	Watts
DC Cathode Current	20	20	Milliamperes
Peak Cathode Current	70	300	Milliamperes
Heater-Cathode Voltage			
Heater Positive with Respect to Cathode			
DC Component	100	100	Volts
Total DC and Peak	200	200	Volts
Heater Negative with Respect to Cathode			
Total DC and Peak	200	200	Volts
Grid Circuit Resistance			
With Fixed Bias	2.2	2.2	Megohms
With Cathode Bias	2.2	2.2	Megohms

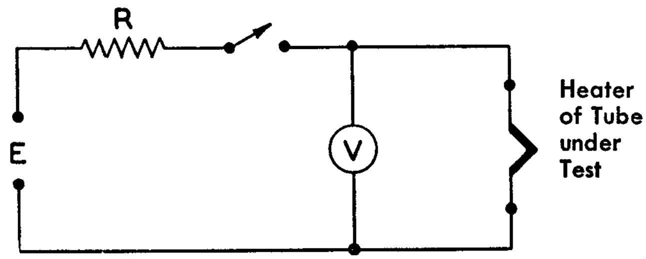
CHARACTERISTICS AND TYPICAL OPERATION

CLASS A_1 AMPLIFIER, EACH SECTION

Plate Voltage	90	250	250	Volts
Grid Voltage	0	−12.5	−8	Volts
Amplification Factor	20	...	20	
Plate Resistance, approximate	6700	...	7700	Ohms
Transconductance	3000	...	2600	Micromhos
Plate Current	10	1.3	9.0	Milliamperes
Grid Voltage, approximate Ib = 10 Microamperes	−7	...	−18	Volts

* Heater warm-up time is defined as the time required in the circuit shown at the right for the voltage across the heater terminals to increase from zero to the heater test voltage (V_1). For this type, E=25 volts (RMS or DC), V_1=5.0 volts (RMS or DC), and R=31.5 ohms.

† Without external shield.



‡ For operation in a 525-line, 30-frame television system as described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission. The duty cycle of the voltage pulse must not exceed 15 percent of one scanning cycle.

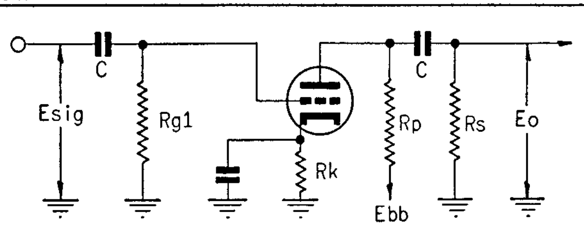
§ Value given is to be considered as an Absolute Maximum Rating. In this case, the combined effect of supply voltage variation, manufacturing variation including components in the equipment, and adjustment of equipment controls should not cause the rated value to be exceeded.

π In stages operating with grid-leak bias, an adequate cathode-bias resistor or other suitable means is required to protect the tube in the absence of excitation.

CLASS A RESISTANCE-COUPLED AMPLIFIER

EACH SECTION

Rp Meg.	R_s Meg.	R_{g1} Meg.	Ebb = 90 Volts			Ebb = 180 Volts			Ebb = 300 Volts		
			Rk	Gain	Eo	Rk	Gain	Eo	Rk	Gain	Eo
0.10	0.10	0.10	3300	14	13	2200	14	26	1800	14	40
0.10	0.24	0.10	3600	14	16	2700	15	33	2200	15	51
0.24	0.24	0.10	7500	14	16	5100	15	30	4300	15	44
0.24	0.51	0.10	9100	14	19	6800	15	39	5100	15	54
0.51	0.51	0.10	13000	14	16	9100	15	30	6800	16	40
0.51	1.0	0.10	15000	14	19	10000	16	32	7500	16	45
0.24	0.24	10	0	15	13	0	16	33	0	17	46
0.24	0.51	10	0	16	17	0	17	38	0	18	62
0.51	0.51	10	0	16	14	0	18	32	0	18	53
0.51	1.0	10	0	17	18	0	18	41	0	19	68

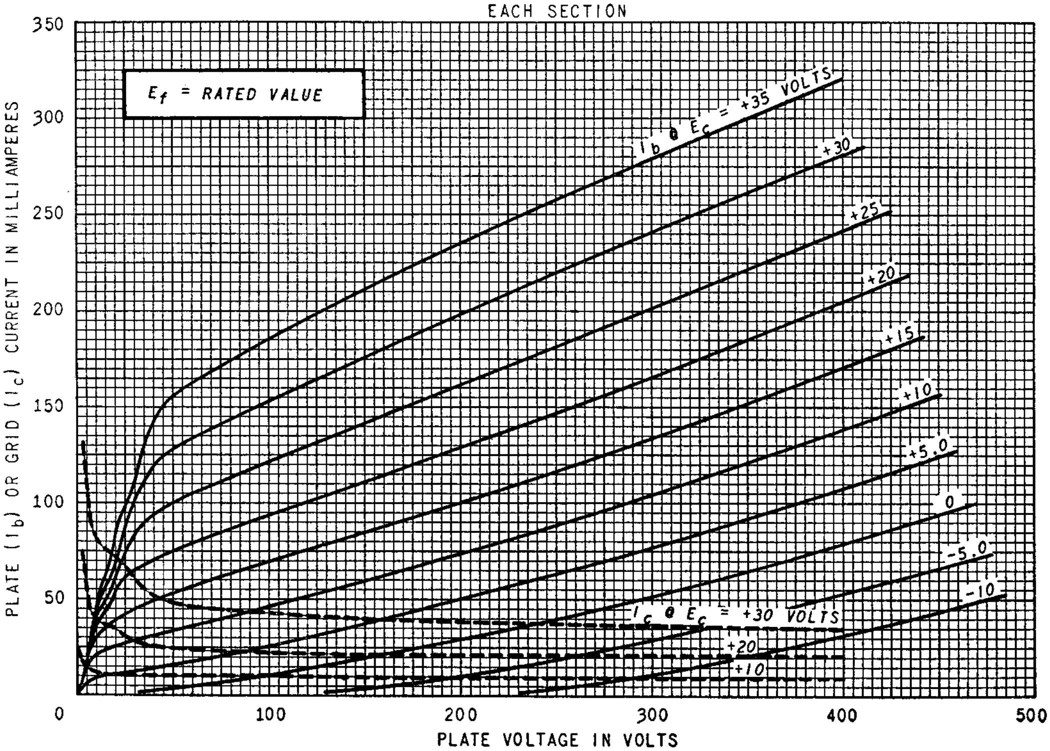


Note: Coupling capacitors (C) should be selected to give desired frequency response. Rk should be adequately by-passed.

Notes: 1. Eo is maximum RMS voltage output for five percent (5%) total harmonic distortion. 2. Gain measured at 2.0 volts RMS output. 3. For zero-bias data, generator impedance is negligible.

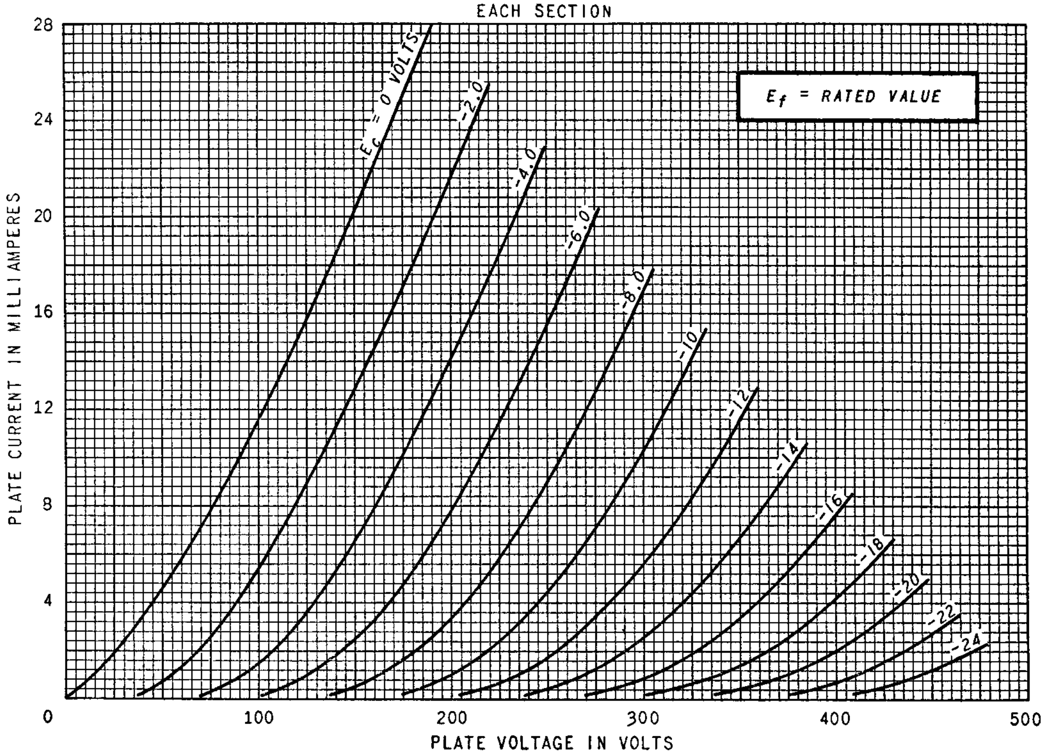
AVERAGE PLATE CHARACTERISTICS

EACH SECTION



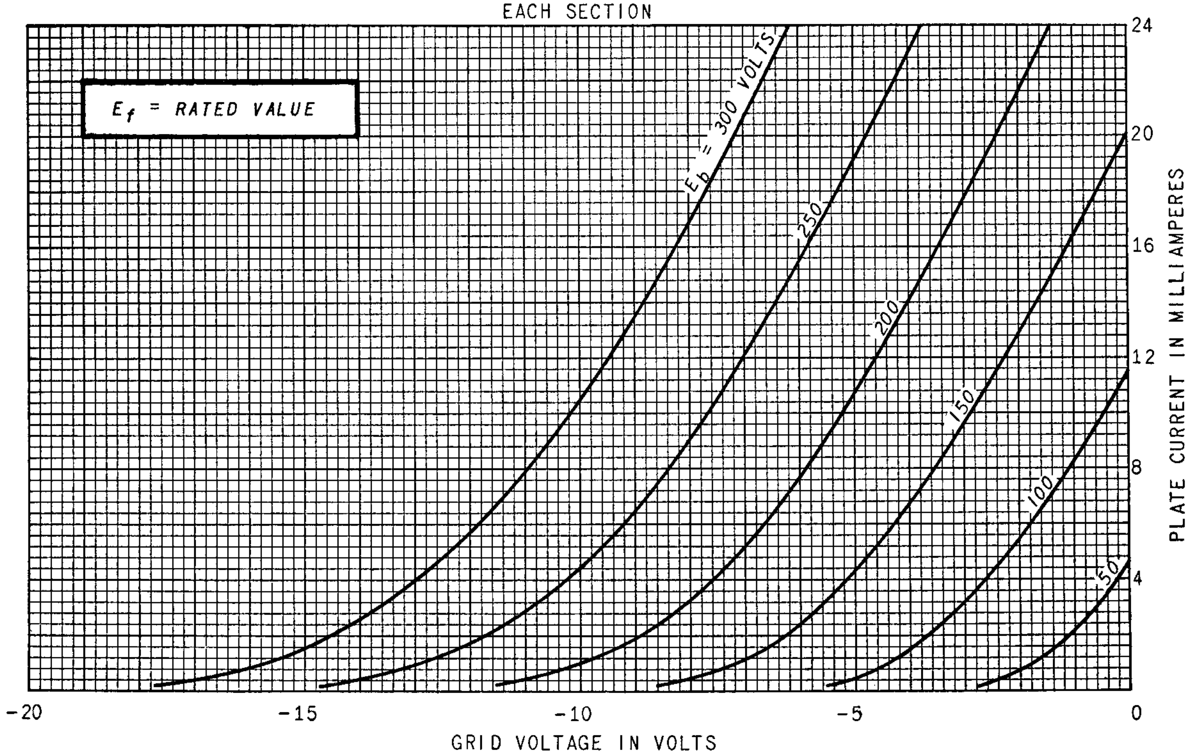
AVERAGE PLATE CHARACTERISTICS

EACH SECTION



AVERAGE TRANSFER CHARACTERISTICS

EACH SECTION



AVERAGE CHARACTERISTICS

EACH SECTION

